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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/940,791	08/29/2001	Larry D. Kinsman	M4065.0014/P014-B	5281

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DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP
2101 L STREET NW
WASHINGTON, DC 20037-1526

EXAMINER

ROSE, KIESHA L

ART UNIT

PAPER NUMBER

2822

DATE MAILED: 07/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/940,791

Applicant(s)

KINSMAN, LARRY D.

Examiner

Kiesha L. Rose

Art Unit

2822

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) ____ is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 39-45 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This Office Action is in response to the amendment filed 17 April 2003.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 39, 42 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art (Fig. 1b) in view of Maruyama et al. (U.S. Patent 6,266,242).

Applicant's Prior Art (Fig. 1b) discloses a memory device comprised of low profile ball grid array semiconductor packages comprised of a base substrate (31) having a top and bottom surface with an aperture (33) therein which extends from the top surface to the bottom surface, a series of conductive traces (34) located on the top and bottom surfaces of the substrate, a plurality of conductive balls (40) connected to the series of conductive traces, a single thin layer of material (32) secured to the base substrate and covering aperture such that a cavity is formed and a semiconductor element (48) formed in cavity. Applicant's Prior Art discloses all of the limitations except for the memory device connected to a central processing unit. Whereas Maruyama discloses a circuit module (Fig. 6) that contains a ball grid array package (30) connected to a central processing unit (2). The memory device is connected to a central processing unit to

Art Unit: 2822

form an information processing apparatus. (Column 1, lines 8-12) Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the semiconductor device of Applicant's Prior Art by incorporating a central processing unit connected to the memory device to form an information processing apparatus as taught by Maruyama. Applicant's Prior Art and Maruyama disclose all the limitations except for the single thin material to have a thickness in the range of 0.025 mm to 0.1mm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the single thin material have to have a thickness in the range of 0.025 to 0.1mm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges in involves only routine skill in the art. In re Aller, 105 USPQ 233 (1955).

Claims 40,41,43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art and Maruyama as applied to claims 39 and 42 above, and further in view of Nakashima et al (U.S. Patent 5,717,252).

Applicant's Prior Art and Maruyama disclose all the limitations except for the thin single layer to be metal or polyimide. Whereas Nakashima discloses a semiconductor device (Figs. 2a-c, 16 and 22) that contains a memory device that comprises a plurality of ball grid array semiconductor packages, which comprise an insulating substrate (2) having a top and bottom surface, where the insulating substrate (2) has an aperture (0) therein extending from the top surface to the bottom surface, a series of conductive traces (1) located on bottom surface of base substrate, a plurality of conductive balls (5)

Art Unit: 2822

connected to series of conductive traces, a single layer of material (4) made of metal (Fig. 2b) or polyimide (Fig. 16) secured to the bottom surface (Fig. 2b) and the top surface (Fig. 22) of the substrate to form a cavity where a semiconductor die (3) is mounted in cavity. The single layer is made of metal or polyimide to act as a conductor to the semiconductor chip or act as an insulation layer. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the devices of Applicant's Prior Art and Maruyama by incorporating the single layer of material to be made of metal or polyimide to provide a conductive connection to the semiconductor chip or act as an insulation layer as taught by Nakashima.

Response to Arguments

Applicant's arguments with respect to claims 39-45 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kiesha L. Rose whose telephone number is 703-605-4212. The examiner can normally be reached on M-F 8:30-6:00 off 1st Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 703-308-4905. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Application/Control Number: 09/940,791

Page 5

Art Unit: 2822

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

KLR

KLR

June 16, 2003


AMIR ZARABIAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800